

*Sup A 4*

I CLAIM:

1. A method of controlling the operation of an echo canceller comprising the steps of:

receiving a far-end signal and determining whether said far-end signal is representative of  
5 a modulated signal;

receiving a near-end signal and determining whether said near-end signal is representative of a modulated signal;

determining whether said echo canceller will converge for said far-end signal; and

controlling the operation of said echo canceller in response to said step of determining convergence and in response to said steps of determining whether said far-end and near-end signals are modulated signals.

2. The method of claim 1 wherein said receiving steps use a high-pass filter to determine the characteristics of said near-end and said far-end signals.

3. The method of claim 1 wherein said predetermined characteristics include the frequency characteristics of said signals.

4. The method of claim 1 wherein said echo canceller includes an adaptive filter and  
20 said step of controlling the operation of said echo canceller includes freezing the adaptation of said adaptive filter.

5. The method of claim 1 wherein said echo canceller includes an adaptive filter and the step of controlling the operation of said echo canceller includes deactivating the echo canceller.

5 6. A computer readable medium having stored therein instructions for causing a processing unit to execute the following method:

receiving a far-end signal and determining whether said far-end signal is representative of a modulated signal;

receiving a near-end signal and determining whether said near-end signal is representative of a modulated signal;

determining whether said echo canceller will converge for said far-end signal; and

controlling the operation of said echo canceller in response to said step of determining convergence and in response to said steps of determining whether said far-end and near-end signals are data.

5 7. A echo canceller comprising:

means for receiving a near-end signal and means for receiving a far-end signal, whereby said near-end signal includes an echo of said far-end signal;

20 determination means, coupled to said near and far-end signals, for determining characteristics of said near-end and far-end signals;

an adaptive filter, coupled to said far-end signal, said adaptive filter using a predetermined algorithm to produce an estimate of an echo;

subtraction means for subtracting out said estimate from said near-end signal; and control means, coupled to said near-end signal, said far-end signal, and said determination means, wherein said control means adjusts the operation of said adaptive filter based upon said characteristics of said near and far-end signals

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8. The echo canceller of claim 7 wherein said control means determines the divergence of the adaptive filter.

9. The echo canceller of claim 7 wherein said control means selectively deactivates said adaptive filter based upon said characteristics of said near and far end signals.

10. The echo canceller of claim 7 further wherein said control means selectively freezes the adaptation of said adaptive filter based up said characteristics of said near-end and said far-end signals.

11. The echo canceller of claim 7 wherein said adaptive filter uses a least mean square (LMS) algorithm.

12. A network comprising:

a first user device;

a first communication link coupled to said first user device;

5 a hybrid circuit, said hybrid circuit comprising an echo canceller, said hybrid circuit

coupled to a second communication link, wherein said echo canceller comprises:

means for receiving a near-end signal and means for receiving a far-end signal, whereby  
said near-end signal includes an echo of said far-end signal;

determination means, coupled to said near and far-end signals, for determining whether  
said near-end and far-end signals are not speech signals;

an adaptive filter, coupled to said far-end signal, said adaptive filter using a  
predetermined algorithm to produce an estimate of an echo;

subtraction means for subtracting out said estimate from said near-end signal; and

control means, coupled to said near-end signal, said far-end signal, and said  
determination means, wherein said control means adjusts the operation of said adaptive filter  
based upon the characteristics of said near and far end signals.

13. An echo canceller control module comprising:

means for receiving a far-end signal and means for receiving a near-end signal;

20 means for determining whether said near and far end signals have predetermined  
characteristics;

means for receiving predetermined operating characteristics of said adaptive filter; and

means for sending a control signal to control the operation of a echo canceller based upon said determination of whether said near and far end signals have predetermined characteristics and said operating characteristics.

5 14. The control circuit of claim 13 wherein said control signal indicates the adaptation of the adaptation filter should be frozen.

15. The control circuit of claim 13 wherein said control signal indicates that the operation of the adaptation filter should be suspended.

16. The control circuit of claim 13 wherein said determination means uses a high-pass filter.